Leveraging Time and Distance

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Give me a lever long enough and a place to sit my fulcrum and I can move the world.

—Archimedes

EACH, reachback, split-based operations, sanctuary, knowledge center; this seemingly endless lexicon adds nothing to the Army's knowledge nor lends any credibility to the widely accepted but still nascent concept of reach. Seldom has an idea been so wholeheartedly embraced, so roundly advocated, yet so little understood or unimplemented. Yet, everyone firmly agrees that all future Army operations will incorporate multilevel, multifunction reach operations. I do not seek to disprove the utility of the reach concept; the intelligence community has organized itself around the concept for more than a decade and has proven its feasibility. However, to believe the doctrine is universal in its applicability without regard for some basic rules is folly.

The allure of reach is almost hypnotic. What other concept promises to be both an economy of force measure and a force multiplier? For the foreseeable future, the United States will remain a power-projection nation. We will continue to base the bulk of our forces within our continental boundaries and deploy them to whatever trouble spots or battlefields arise around the world. A number of factors govern our ability to deploy forces rapidly. Those factors include strategic lift, theater infrastructure, and communications and connectivity.

Having troops, especially support and staff function personnel contribute to the fight from outside the theater is an idea with immediate appeal. Also, if this is possible, it keeps major portions of the vast logistics tail in sanctuary or out of harm's way. Anything that contributes to fewer casualties is doubly appealing. However, since 9/11, the vulnerability of domestic installations has reinforced the fact that sanctuary is a relative term, while the increasing threat of so-

phisticated computer network attacks casts a different light on a concept that relies on and derives its value from the virtual environment. Still, information technology that enables forces outside the theater to affect a tactical situation is appealing.

The next century will prove the veracity of the many pronouncements that reachback already seems trite. Information and technology are ubiquitous. Time and distance are irrelevant. Here and

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there simply do not exist in a virtual environment. Automation empowers individuals and small groups to the detriment of organizations. Telephony and visualization will dominate future operations. Virtual reality is reality. These simple statements are irrefutable and are the foundation of the reach concept. The bottom line is that revolutionary information technologies and the growing understanding of knowledge-centric operations, coupled with the desire to tailor combat formations to a situation, have given birth to a concept by which commanders can tailor operational forces while actually enhancing the decisionable information they receive and disseminate. All of this seems to be the perfect solution, of course, and at first glance appears easily accomplished. Yet, the truth is that reach is rocket science. The seamless orchestration of worldwide connectivity at multiple levels of security with a variety of protocols and permissions to access and interact with

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The operational and organizational concept (O&O) for the Interim Brigade Combat Team (IBCT) captures the initial vision for the Army's Transformation of future tactical forces. Although the document was not written as a final vision of the Army's Objective Force, it represents a bridge to the future and offers a brief survey that reveals that much is left to the imagination. In 14 instances, the document attributes specific functions, operations, and end states to reachback concepts. For example, it says that "the IBCT is dependent upon the division and higher echelons of command for reachback linkages to expand its capabilities in the areas of information, intelligence, joint effects, force protection, and sustainment."

The O&O concept describes reachback as an O&O principle. Great efficiencies in manpower and equipment have been achieved in force design by proclaiming that functions that can be accomplished out of theater or through reachback to higher levels of command will not be incorporated into the IBCT organic force structure. The O&O document explains that the IBCT will execute reachback on a "routine, deliberate basis as a combat-multiplier with the concept enabling the IBCT to reduce its footprint in the area of operations without compromising its ability to accomplish the assigned missions." The IBCT O&O concept lays out the following three crucial components to assure an effective reachback capability:

Advanced command, control, communications, computers, intelligence, surveillance, and reconnaissance systems having appropriate interfaces with higher headquarters and outside agencies and appropriate connectivity for distributed operations at range and in urban and complex terrain.

- A set of tactics, techniques, and principles (TTP) to govern staff activity.
- A well-trained staff that understands the capabilities available through reachback and how to employ them for mission requirements.

These basic requirements might of themselves be incredibly difficult to achieve, but arriving at a definition for reachback that everyone can agree on is problematic. Simplicity remains a principle of war, especially in reach discussions that revolve around broadband connectivity and simultaneous operations by multiple large staffs at numerous geographically dispersed multiechelon headquarters. The sole doctrinal definition for reach appears in Field Manual 2-33.5/ST, Intelligence Reach Operations, which states, "Intelligence reach is a process by which deployed military forces rapidly access information from, receive support from, and conduct collaboration and information sharing with other units (both deployed in theater and outside the theater) unconstrained by geographic proximity, echelon or command."4

In a larger more generic context, which embraces operations, logistics, and the array of other disciplines from medicine to maintenance envisioned to benefit from this new way of projecting power, a better definition might be, "Reach is a virtual and collaborative strategy to access, share, and disseminate information in support of intelligence, maneuver, and logistics regardless of distance, time, or echelon."

The Future of Reach

Rather than stumbling through a doctrinal jungle in its effort to develop and refine operational reach concepts, the Army should first examine some of the problems, solutions, and TTP proven successful during a decade of worldwide intelligence reach operations. The maturation of operational reach concepts and offset command and control between the austere capabilities of Operation Desert Storm and the robust broadband architectures of Afghanistan are astounding. That the XVIII Airborne Corps, as the joint task force, is operating a Spartan joint intelligence support element at Baghram, while virtually the entire U.S. Central Command (CENTCOM) staff remains in Tampa, bears stark contrast to the operation 11 years ago when CENTCOM operated from Saudi Arabia, and communications links between forward units and those supporting the units from the continental United States were tenuous and



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finite. By examining intelligence solutions, we should derive some tenets whose codification would make reach more achievable.

Communications is the essence of reach. The first commandment of successful reach operations is that a robust, dynamic, dedicated broadband architecture is essential. Bandwidth, coupled with compression technologies, will be the coin of the realm, and if Archimedes were alive today, he would immediately recognize it as the lever in his simple machine. Nothing is possible in a remote environment without a dedicated networked, web-based, virtual communications architecture. That requirement cannot be wished away by such statements as, "The tactical force will be linked to the Global Information Grid (GIG) for connectivity."

During Operations Desert Shield and Desert Storm, the world was forever changed when the Army fielded the TROJAN SPIRIT network and tactical satellite equipment. The advent of dedicated, secure, broadband tactical equipment gave commanders the connectivity they had long envisioned. However, like the appetite for imagery, the require-

ment for bandwidth in a reach operation will be insatiable. Multiple simultaneous video teleconferences between headquarters located thousands of miles apart are essential. Collaborative tools requiring large amounts of graphic data and imagery to be moved in real time and whiteboarding capabilities used to tie together commanders, staffs, and higher headquarters are other undeniable baseline requirements.

Again and again, operations involving deployed and secure headquarters prove that dedicated video, voice, and data circuits are crucial. Future Army operations cannot be limited to the constrained connectivities currently envisioned in the Warfighter Information Network-Tactical (WIN-T), but operations will continue to demand far greater capabilities as a baseline. Compression technologies will be significant enablers when combined with true broadband capabilities. Requirements must always be the primary consideration when contemplating any reach operation, and commanders must be familiar enough with communications-architecture considerations to ensure their operations will not be diminished by bandwidth constraints.

Information about information. Ten years ago, high-echelon commanders were concerned about a lack of bandwidth constraining their ability to disseminate and receive information. Today, a prevalent complaint heard from combat arms company and battalion commanders at national and joint readiness training centers is about that same bandwidth constraint. Whereas 10 years ago those concerned

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The dilemma, however, can become the classic "be careful what you ask for" problem as "junk expands to fill available space." Once given the bandwidth they deem necessary, commanders at every level will be inundated with information unless they apply information-management technologies along with advances in bandwidth. As databases expand, grow increasingly intricate, and employ redundant firewalls and multilevel security applications, webbased collaborative tools; infobots; dynamic reasoning engines; data mining; metadata tagging; bulk data warehousing; retrieval technologies; and automated Internet search engines, slaved to machine language translation technologies, will be recognized as the enablers of the future.

Brilliant Push, Smart Pull. Managing information is already proving to be a crucial survival element. A "predictable push and reliable pull" strategy that involves bandwidth and information management will become the second reach commandment.

Brilliant Push occurs when the producers of information are knowledgeable of a customer's requirements and can send the desired information to the customer without further requests. Today, Brilliant Push is accomplished through the Joint Dissemination System or the Automated Message Handling

System. In the future, information dissemination management systems, which employ a series of infobots (autonomous software packages that simulate human activity in that they automatically search for desired information) will greatly enhance Brilliant Push.

Smart Pull occurs when the customer (usually the forward-deployed headquarters, but in reality any element in the network) is familiar enough with existing databases to anticipate the location of desired information. Knowledge of the types and locations of multiple databases (logistics, depot inventories, medical information, intelligence, maintenance procedures) can greatly increase the efficiency of information exchange by saving time and effort on the part of staff members at every echelon.

Smart Pull is greatly enhanced through the use of home pages. The concept of Smart-Pull home-pages expands the scope of the traditional homepage. Single-discipline production centers, in accordance with the requirements expressed by customers, dedicate portions of their homepages to the posting of reports and products as they become available. This enables customers to pull data and reports, as required, thereby reducing the load on communications links and local storage. Should the customer determine that specific information is required continuously or on a periodic basis, the customer can request the report or product to become a part of his automatic Brilliant Push profile.

Such information management and coordination strategies demand the predeployment training of elements that will work together while separated by great distances. Virtual operations demand prior training and coordination to develop TTP for predictable information exchanges. Any adopted information-management techniques must provide "maximum access with minimum clicks" in predictable, reliable formats.

Fence support elements in sanctuary. Support elements and assets in sanctuary must be fenced on behalf of the deployed commander they support. This precept is always readily agreed on at the beginning of any operation designed to receive support from out-of-theater nonorganic elements. Time, however, has a way of fading all commitments, and as new crises develop, each requires attention, analysis, information, logistics, and planning support. The originally dedicated support team is drawn on to work immediate and seemingly more urgent problems. The deployed commander, still in need of the supporting assets but no longer able to get the full support his force requires, swears never



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to trust this concept called reach in the future.

Time and again this dilemma has occurred, and most certainly will again. Joint commands in particular, responsible for huge portions of the earth's surface and faced with a constant stream of erupting crises, are forced to shift manpower whenever and wherever it is immediately required. This must be faced as a fact of life and should be kept in mind as the Army develops a service strategy for reach or knowledge centers to support its operations.

Reduced footprint and inherent redundancies. One of the most appealing facets of reach is the fact that fewer soldiers are deployed forward into the hostile theater. However, the success of the forward-deployed force is totally predicated on an element located outside the area of operations. Therefore, another basic principle of successful reach is that although the footprint of the deployed force can be greatly reduced, it might in fact require more total personnel and resources to accomplish the mission than if the entire force were forward deployed.

Each staff element will require a small contingent forward to directly support the commander. And in the sanctuary location, it is highly unlikely that any element will be able to reduce its personnel requirements. In fact, an expanded staff will almost certainly be required at the secure location to perform 24-hour operations to provide all staff requirements for the deployed force. This realization is essential. Reach operations will not diminish personnel and resource requirements but will increase them. The beauty of the concept is that although more people might be actually deployed they will not be susceptible to becoming casualties, and therefore, they will not cause a logistics support concern for the deployed tactical commander.

Training the digital squad for split-based operations. Paramount in developing reach strategies should be the more efficient use of human resources within a given timeframe. Concurrent with simultaneous manning of two support headquarters, one in theater and one supporting from outside the theater, is the new requirement to train redundant

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skill sets. If in the past each operation required a single soldier to be trained to do a specific operation, or two in the case of 24-hour operations, reach will require four soldiers at a minimum to be able to perform that same function. The requirement could easily expand to six if rotations or long-term operations are considered. Digitally enabled units and squads operating in multiple parallel headquarters present commanders with a significantly more challenging training dilemma than has traditionally been the case. Reach operations cannot be accomplished "out of hide." Units must be resourced with additional amounts of personnel and equipment, or split-based operations will be doomed to failure.

Units, leaders, and personnel deploying forward into theater must have developed a close working relationship with the organization supporting them from outside theater before deployment. To believe that TTP will ever be interchangeable or to expect deployed units to simply plug into an unfamiliar architecture or higher unit is a recipe for disaster.

The hierarchy of helicopters. One often-repeated anecdote growing out of the Vietnam war was that commanders would invariably take the opportunity to influence subordinate command levels in combat situation if given the chance. The virtual environment presents commanders at every level this same opportunity. Blurring lines between the traditional tactical, operational, and strategic levels will create greater complexity for tactical commanders and almost certainly will require more mature and experienced leaders as operations transform from a physical plane to a mental one. With a common operational picture, everyone will have the same view of the battlefield. With increased Blue Force resolution and vastly improved intelligence, surveillance, and reconnaissance (ISR) integration, the temptation to be the first to make the right decision might prove irresistible. This dilemma has recently risen in Afghanistan as the digital video feed from unmanned aerial systems is simultaneously viewed at multiple locations and echelons.

Questions from higher headquarters concerning why specific actions have not been taken or results achieved have been a repeated headache for tactical commanders. Who and at what level will firewalls be provided to allow the tactical commander freedom of decision? Is it the combatant commander who insulates his theater from national-level influence? Will he then tell the battalion commander how to maneuver his forces? Restraint is a difficult thing for many military commanders to exercise, and with a virtual environment giving high-level, out-of-theater commanders omniscient views, this problem will continue to be a concern. The danger is that reachback will, in fact, result in grab-forward.

Building the Knowledge-Projection Platform

Reach occurs at many levels. During the debacle surrounding the sinking of the Russian submarine *Kursk*, Secretary of Defense Donald Rumsfeld said at a Pentagon news conference that "the United States was utilizing reachback technologies to assist the Russians." When questioned by the media for details, Rumsfeld sheepishly admitted that the reachback technology he had referred to was a telephone.

A phone call is certainly the most elementary definition of reach, and a simple response to a request for information is the most elementary operation within the knowledge center. At this lowest level of response, the sanctuary staff might not even fully monitor the tactical situation forward but simply respond to a request. This type of reach might be related to an infrastructure insufficient to support complete tactical awareness or to a forward operation being in its initial stages and the situation being still unrefined.

A higher level of operation requires the sanctuary to establish a virtual singularity with the forward-deployed headquarters. In this scenario, the sanctuary has full situational awareness and provides products and information in a Brilliant Push-Smart Pull context. The sanctuary staff at this level begins to operate as a prism sifting and filtering information from higher headquarters so as not to overwhelm the forward element. The sanctuary must be careful not to constrain or interfere with time-sensitive information while at the same time working to link databased information to homepages, thereby guaranteeing access both up and down echelons.

At the highest level, sanctuary staff elements must be the commander's anticipatory-knowledge agent, independently planning and fully participating in future operations. Networked with deployed tactical elements, higher headquarters, and national organizations, the knowledge-projection platform must fully understand the commander's intent, the current tactical situation, and assume the lead for planning and resourcing future operations as well as ISR and battle management at the commander's behest.

This knowledge center, or Home Station Operations Center, is in reality the forward-deployed force's knowledge-projection platform. Just as the installation, airfield, or port from which the force embarked is a power-projection base, so the knowledge-projection platform sustains the force with the vital information it requires. The center is both command post and research node, and it must at all times have complete cognizance of the deployed commander's intent; understanding the forward force's situation and current mission status: access to all relevant data; and knowledge of what is being planned at higher headquarters and national levels. The knowledge center, in its anticipatory mode, should be researching and producing items the forward commander might not yet realize he needs. When such products become important, the deployed staff can simply pull them from the homepage.

What should the Army focus on now as it builds organizations whose goal is ultimately to be the deployed commander's anticipatory knowledge agent and knowledge-projection platform? How is this platform organized? Where and with what Army organizations? Which functions are best performed in sanctuary, and which must be accomplished forward under the commander's direct supervision?

Force-protection issues in the area of operations will continue to be prime considerations in deciding how much of the force should be deployed forward. Every situation will be different, and every commander will be more or less willing to accept the option of remotely locating portions of his organic force and support elements. Including the supported commander in all reach planning decisions is essential. Can intelligence fusion and ISR integration be accomplished efficiently in sanctuary, or do subsets need to be worked forward? Can asset management be efficient if separated from mission management by 7,000 miles and 12 time zones? Will the commander allow his plans section to work virtually in sanctuary, providing an austere forward plans element with their products? The proximity of the sanctuary plans staff to a simulations center might greatly enhance the staff's capability, and if the staff can receive the commander's guidance and intent via dedicated video teleconferences, it might, in fact, prove to be more effective.

The Army must examine closely the operational architecture within which the Army employs reach operations. Reach has vertical and horizontal elements and at the heart of its success is how these

contribute to the concept and how the Army can most efficiently organize, use, and array personnel to support this concept. A virtual network implies that forward elements can draw information from any number of sources traditionally arrayed in various echelons and from databases belonging to any agency. In some cases, and with units who have worked together over long periods of time, this might be possible, but for the majority of the time, it is

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just not that simple. This is where an enabling headquarters must be included in the operational architecture, it cannot be an afterthought. This enabler might be—

- The deployed units' organic higher headquarters or home station organized to provide Knowledge Projection Center support.
- An Army component geographic Knowledge Projection Center with close ties to the theater joint command
- A portal provider linking the forward unit to an array of functional databases.

The point is that some entity must be practiced in support, performing collection-management functions; synchronizing combat power and effects; collating data for homepages; planning and resourcing future operations; and parenting the deployed force. Units conducting deployed operations must be able to reach into a higher facilitating element. They will never be able to simply locate appropriate databases and plug into them, regardless of how alluring and romantic that concept might appear.

That the Army will ever fight in any organizational construct other than as a member of a joint or combined contingency task force is highly improbable. At first glance, reliance on the higher joint organization to provide a knowledge center for the Armed Forces to reach into seems appealing. Any such reliance, however, will ultimately prove to be a mistake. To rely on a joint headquarters, even if augmented by dedicated Army elements for logistics and operations support, fails the common-sense test. In

most cases, the joint framework demands more information than it provides, and as long as the forward deployed force has access to broadcast information and direct downlinks, the need for the

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sanctuary to provide data is lessened. The joint theater common relevant operational picture presented by the Global Command and Control System will never provide the Army component commander with the granularity and level of detail he requires to conduct tactical-level maneuver operations. Service components will continue to have requirements for intelligence, operations, and logistics-specific information.

Extensive training for knowledge-center and forward-deployed personnel is essential. In fact, there should be no distinction between these two elements. Manned by administrative, intelligence, operations, logistics, and planning staff personnel at a minimum, and with a practiced plan for augmentation depending on specific contingencies, the sanctuary staff is a macrocosm of the austere staff deployed forward with the combat force. The skills both staffs need are virtually identical, and the utility of rotating personnel from sanctuary to the deployed location and back will build and preserve a sense of urgency within respective staff elements. The sanctuary staff will not be able to count on a train-up period in preparation for a contingency. Developing and maintaining familiar working relationships with myriad jointand national-level organizations will be integral to any reach operations center. TTP for obtaining, developing, and formatting information to be passed forward will be vital.

Training will be a constant, but leadership within the knowledge center will be a defining requirement. There are many who feel reach is a concept in which the Army should not invest simply because it obviates the shared sense of burden—that there is a moral requirement for all to suffer together. As long as leaders can maintain a sense of urgency within the sanctuary, nothing could be farther from the truth. Those forward are constantly worrying about survival, rain on their equipment, or the hun-

dreds of other problems threatening their success. Naturally, the quality of their work suffers. The sanctuary provides a secure location where clear, rested thought can contribute to analysis and planning, which is then contributed forward in a collaborative environment. Those in sanctuary must be constantly aware of the threats forward so as to preclude the personal arguments and frustrations that inevitably arise.

The sanctuary should never be viewed as a clearinghouse for all information. Such a construct would only prove to constrain information exchange and is the antithesis of a web-based network design. Timesensitive information, such as signals intelligence, must be free to flow directly to the ultimate consumer at the lowest tactical level in real time, whether that consumer is an F-16 pilot or an armor company commander. This point illustrates the power of and necessity for broadcast systems and direct downlinks. The capability to immediately disseminate time-sensitive information to all echelons and elements will continue to be a basic building block for reach operations.

Locating and resourcing the Army's knowledgeprojection platforms will prove to be absolutely crucial decisions. After making a decision, users can construct the required infrastructure, so parameters such as existing buildings or communications architectures should bear only minimal weight in the decision process. Likewise, access to Army, joint, and higher headquarters should be a consideration, but we must also consider access to dynamic simulation and modeling capabilities. Universities and education centers should also be considered if the knowledge center is to provide a broad horizon of cultural, socioeconomic, political, and technical expertise. We must be careful not to dilute this effort by building too many knowledge centers that might, in the long run, prove unaffordable.

Operations in a virtual environment should preclude the ownership battles the Army has often witnessed between major elements and commands. Knowledge-projection platforms must be connected within the GIG as well as within a secure virtual ring. They should be geographically oriented, possibly serving the Pacific, European, and Southwest Asian theaters, respectively, and have a subordinate relationship to the Army component commander at U.S. Pacific Command, CENTCOM, and U.S. European Command joint commands. Much of the manning for each center should be drawn from the component command's staff. The Army will fight within a joint construct and should organically organize to support that relationship and framework. Each of the knowledge centers should incorporate the theater analysis and control element (ACE) as well as operations and logistics staffs of equal capabilities. As the Army develops an operational architecture for the Objective Force, it should include a knowledge-projection structure as an essential force multiplier. Such operations will not occur by augmentation nor be created "out of hide" by units tasked at the last minute. These organizations should be equipped and manned as ALO-1, TOE units. They must be as highly trained and as ready to accomplish their mission as are the combat units they will enable.

An alternative strategy might be to capitalize on the five existing Army Reserve Intelligence Support Centers and leverage their joint manning and training missions into home station operations centers. Already possessed with superb bandwidth and connectivity, these centers could easily be expanded to integrate operations and logistics support elements. This might prove an excellent mission for the reserve components of all services, with tailored multicomponent, multiservice organizations dedicated to various echelons, theaters, war plans, or CINCs trained to specific support and reach missions. These knowledge-projection centers could be war-traced to joint or Army headquarters. Supporting units would then develop a habitual relationship with supported units and train on the same machines they would operate during mobilization and wartime. The evaluation of such organizations might ultimately optimize an infrastructure that already largely exists.

Finally, with the development of IBCTs, the Army began developing a doctrine for reach, subsequently testing and proving reach doctrine in a variety of operational scenarios. Virtually all Army experience and success with reach operations has been generated within the intelligence community. The Army's Intelligence and Security Command (INSCOM), in its role as the deputy chief of staff for operations and plans executive agent for the Land Information Warfare Agency, has developed in parallel an Information Dominance Center (IDC). The IDC has researched and built numerous sophisticated automated tools to mine, correlate, and visualize structured and unstructured data. These tools and the IDC are exactly the types of synergies on which the Army should capitalize during its experimentation. One solution might be for the U.S. Army Training and Doctrine Command to designate the Intelligence Center at Fort Huachuca, Arizona, as the Army's proponent for reach operations, with subordinate supporting efforts from the Signal Center at Fort Gordon, Alabama, and the Combined Arms

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Support Command at Fort Lee, Virginia. The Combined Arms Center at Fort Leavenworth could then act as the integrating headquarters for reach doctrine development. Subsequently, INSCOM could be designated as the executive agent for operational reach concept development being resourced and tasked to build the portals through which the various knowledge centers conduct operations.

Will bandwidth be the kind of lever Archimedes spoke of four centuries ago? Could the fulcrum in this case be the knowledge-projection platform that, when properly resourced, would provide a foundation to transform the way the Army conducts operations in the next century? Leader development and training will continue to be key factors contributing to the success or failure of this concept. As the Army continues to develop and apply operational reach concepts, it must keep in mind the complexity of such operations and realize that reach, which many have so quickly embraced, is hardly the panacea for which so many have wished. MR

NOTES

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